

454 SULFOLOBUS
181 ACIDOCALDARIUS
L9 491 SULFOLOBUS OR ACIDOCALDARIUS

FILE 'BIOTECHNO'
658 SULFOLOBUS
275 ACIDOCALDARIUS
L10 709 SULFOLOBUS OR ACIDOCALDARIUS

TOTAL FOR ALL FILES
L11 8346 SULFOLOBUS OR ACIDOCALDARIUS

=> s trehalose

FILE 'MEDLINE'
L12 1972 TREHALOSE

FILE 'SCISEARCH'
L13 2535 TREHALOSE

FILE 'LIFESCI'
L14 1308 TREHALOSE

FILE 'BIOTECHDS'
L15 521 TREHALOSE

FILE 'BIOSIS'
L16 3823 TREHALOSE

FILE 'EMBASE'
L17 1935 TREHALOSE

FILE 'HCAPLUS'
L18 5656 TREHALOSE

FILE 'NTIS'
L19 61 TREHALOSE

FILE 'ESBIOBASE'
L20 805 TREHALOSE

FILE 'BIOTECHNO'
L21 1037 TREHALOSE

TOTAL FOR ALL FILES
L22 19653 TREHALOSE

=> s non-reducing saccharide#

FILE 'MEDLINE'
2433763 NON
73955 REDUCING
2623 SACCHARIDE#
L23 1 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'SCISEARCH'
518884 NON
82111 REDUCING
3553 SACCHARIDE#

L24 2 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'LIFESCI'
118756 "NON"
19077 "REDUCING"
1005 SACCHARIDE#

L25 3 NON-REDUCING SACCHARIDE#
("NON" (W) "REDUCING" (W) SACCHARIDE#)

FILE 'BIOTECHDS'
22327 NON
5859 REDUCING
706 SACCHARIDE#

L26 15 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'BIOSIS'
474771 NON
80070 REDUCING
27137 SACCHARIDE#

L27 13 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'EMBASE'
428771 "NON"
70859 "REDUCING"
2332 SACCHARIDE#

L28 0 NON-REDUCING SACCHARIDE#
("NON" (W) "REDUCING" (W) SACCHARIDE#)

FILE 'HCAPLUS'
410977 NON
186467 REDUCING
10184 SACCHARIDE#

L29 19 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'NTIS'
84456 NON
24538 REDUCING
250 SACCHARIDE#

L30 0 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'ESBIOBASE'
127286 NON
19949 REDUCING
810 SACCHARIDE#

L31 0 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

FILE 'BIOTECHNO'
95655 NON
15581 REDUCING
934 SACCHARIDE#

L32 0 NON-REDUCING SACCHARIDE#
(NON (W) REDUCING (W) SACCHARIDE#)

TOTAL FOR ALL FILES

L33 53 NON-REDUCING SACCHARIDE#
=> s (122 or 133) (8a) (synthes? or produc? or form#####) (5a) enzym?
FILE 'MEDLINE'
360157 SYNTHESES?
892273 PRODUC?
925210 FORM#####
854146 ENZYM?
L34 39 (L12 OR L23) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'SCISEARCH'
607484 SYNTHESES?
1148375 PRODUC?
1300302 FORM#####
369456 ENZYM?
L35 51 (L13 OR L24) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'LIFESCI'
111542 SYNTHESES?
378068 PRODUC?
287187 FORM#####
174869 ENZYM?
L36 36 (L14 OR L25) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'BIOTECHDS'
20899 SYNTHESES?
148825 PRODUC?
59860 FORM#####
87824 ENZYM?
L37 48 (L15 OR L26) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'BIOSIS'
519392 SYNTHESES?
1257082 PRODUC?
1094999 FORM#####
909774 ENZYM?
L38 70 (L16 OR L27) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'EMBASE'
449294 SYNTHESES?
895958 PRODUC?
830949 FORM#####
591498 ENZYM?
L39 31 (L17 OR L28) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'HCAPLUS'
.999290 SYNTHESES?
2470442 PRODUC?
625169 PRODN
2781937 PRODUC?
(PRODUC? OR PRODN)
3685888 FORM#####
759973 ENZYM?
L40 119 (L18 OR L29) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?
FILE 'NTIS'
39512 SYNTHESES?
341830 PRODUC?
269806 FORM#####

11891 ENZYM?
L41 4 (L19 OR L30) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?

FILE 'ESBIOBASE'
105954 SYNTHESES?
287167 PRODUC?
233496 FORM#####
146854 ENZYM?

L42 26 (L20 OR L31) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?

FILE 'BIOTECHNO'
135351 SYNTHESES?
298474 PRODUC?
238674 FORM#####
270706 ENZYM?

L43 32 (L21 OR L32) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?

TOTAL FOR ALL FILES
L44 456 (L22 OR L33) (8A) (SYNTHESES? OR PRODUC? OR FORM#####) (5A) ENZYM?

=> s 144 and thermostab?

FILE 'MEDLINE'
4753 THERMOSTAB?
L45 3 L34 AND THERMOSTAB?

FILE 'SCISEARCH'
6070 THERMOSTAB?
L46 7 L35 AND THERMOSTAB?

FILE 'LIFESCI'
2930 THERMOSTAB?
L47 5 L36 AND THERMOSTAB?

FILE 'BIOTECHDS'
5495 THERMOSTAB?
L48 13 L37 AND THERMOSTAB?

FILE 'BIOSIS'
8021 THERMOSTAB?
L49 9 L38 AND THERMOSTAB?

FILE 'EMBASE'
7587 THERMOSTAB?
L50 5 L39 AND THERMOSTAB?

FILE 'HCAPLUS'
13309 THERMOSTAB?
L51 11 L40 AND THERMOSTAB?

FILE 'NTIS'
178 THERMOSTAB?
L52 0 L41 AND THERMOSTAB?

FILE 'ESBIOBASE'
1943 THERMOSTAB?
L53 3 L42 AND THERMOSTAB?

FILE 'BIOTECHNO'
4641 THERMOSTAB?

L54 5 L43 AND THERMOSTAB?

TOTAL FOR ALL FILES

L55 61 L44 AND THERMOSTAB?

=> s l11 and (l22 or l33)

FILE 'MEDLINE'

L56 11 L1 AND (L12 OR L23)

FILE 'SCISEARCH'

L57 23 L2 AND (L13 OR L24)

FILE 'LIFESCI'

L58 9 L3 AND (L14 OR L25)

FILE 'BIOTECHDS'

L59 19 L4 AND (L15 OR L26)

FILE 'BIOSIS'

L60 17 L5 AND (L16 OR L27)

FILE 'EMBASE'

L61 5 L6 AND (L17 OR L28)

FILE 'HCAPLUS'

L62 32 L7 AND (L18 OR L29)

FILE 'NTIS'

L63 0 L8 AND (L19 OR L30)

FILE 'ESBIOBASE'

L64 12 L9 AND (L20 OR L31)

FILE 'BIOTECHNO'

L65 12 L10 AND (L21 OR L32)

TOTAL FOR ALL FILES

L66 140 L11 AND (L22 OR L33)

=> s (l55 or l66)not 1996/py range=,1996

FILE 'MEDLINE'

223309 1996/PY

L67 0 (L45 OR L56)NOT 1996/PY

FILE 'SCISEARCH'

794148 1996/PY

L68 0 (L46 OR L57)NOT 1996/PY

FILE 'LIFESCI'

43658 1996/PY

L69 1 (L47 OR L58)NOT 1996/PY

FILE 'BIOTECHDS'

11161 1996/PY

L70 6 (L48 OR L59)NOT 1996/PY

FILE 'BIOSIS'

405433 1996/PY

L71 1 (L49 OR L60)NOT 1996/PY

FILE 'EMBASE'

338946 1996/PY

L72 0 (L50 OR L61)NOT 1996/PY

FILE 'HCAPLUS'

659369 1996/PY

L73 3 (L51 OR L62)NOT 1996/PY

FILE 'NTIS'

14160 1996/PY

L74 0 (L52 OR L63)NOT 1996/PY

FILE 'ESBIOBASE'

151367 1996/PY

L75 0 (L53 OR L64)NOT 1996/PY

FILE 'BIOTECHNO'

0 1996/PY

L76 0 (L54 OR L65)NOT 1996/PY

TOTAL FOR ALL FILES

L77 11 (L55 OR L66) NOT 1996/PY

=> s (155 or 166) and py=<1995 range=1997,

FILE 'MEDLINE'

18926 PY=<1995

L78 0 (L45 OR L56) AND PY=<1995

FILE 'SCISEARCH'

525 PY=<1995

L79 0 (L46 OR L57) AND PY=<1995

FILE 'LIFESCI'

13245 PY=<1995

L80 0 (L47 OR L58) AND PY=<1995

FILE 'BIOTECHDS'

255 PY=<1995

(PY=<1995)

L81 0 (L48 OR L59) AND PY=<1995

FILE 'BIOSIS'

5732 PY=<1995

L82 0 (L49 OR L60) AND PY=<1995

FILE 'EMBASE'

634 PY=<1995

L83 0 (L50 OR L61) AND PY=<1995

FILE 'HCAPLUS'

33103 PY=<1995

L84 0 (L51 OR L62) AND PY=<1995

FILE 'NTIS'

64177 PY=<1995

L85 0 (L52 OR L63) AND PY=<1995

FILE 'ESBIOBASE'
384 PY=<1995
L86 0 (L53 OR L64) AND PY=<1995

FILE 'BIOTECHNO'
845083 PY=<1995
L87 0 (L54 OR L65) AND PY=<1995

TOTAL FOR ALL FILES
L88 0 (L55 OR L66) AND PY=<1995

=> dup rem 177

PROCESSING COMPLETED FOR L77
L89 7 DUP REM L77 (4 DUPLICATES REMOVED)

=> d tot

L89 ANSWER 1 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI Novel transferase and amylase production and use;
enzyme preparation for oligosaccharide and alpha, alpha-
trehalose production
AU Kato M; Miura Y; Kettoku M; Kobayashi K; Iwamatsu A; Komeda T
AN 1996-02920 BIOTECHDS
PI WO 9534642 21 Dec 1995

L89 ANSWER 2 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI **Thermostable non-reducing**
saccharide-forming enzyme;
non-reducing partial starch hydrolyzate or **trehalose**
production using new **Sulfolobus** sp. **enzyme**
and glucoamylase or alpha-glucosidase for use as a sweetener, etc.
AU Nakada T; Chaen H; Sugimoto T; Miyake T
AN 1996-03026 BIOTECHDS
PI EP 688867 27 Dec 1995

L89 ANSWER 3 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI **Thermostable trehalose-releasing enzyme;**
Sulfolobus acidocaldarius and **Sulfolobus solfataricus**
thermostable enzyme production and characterization,
AU Ikegami S; Kubota M; Sugimoto T; Miyake T
AN 1996-04132 BIOTECHDS
PI EP 688866 27 Dec 1995

L89 ANSWER 4 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI **Non-reducing saccharide-forming**
enzyme and its **production** and application;
Arthrobacter sp. and Rhizobium sp. fermentation and **enzyme**
use in alpha-glucosyl **trehalose** production
AN 1994-11285 BIOTECHDS
PI EP 606753 20 Jul 1994

L89 ANSWER 5 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI **Thermostable amylolytic activity from Sulfolobus**
solfataricus;
amylase production, purification and characterization; starch
saccharification to glucose and **trehalose**
SO Biotech Forum Eur.; (1991) 8, 4, 201-03
AU Lama L; Nicolaus B; Trincone A; Morzillo P; Calandrelli V; Gambacorta A

AN 1991-08311 BIOTECHDS

L89 ANSWER 6 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
TI Starch conversion with immobilized thermophilic archaebacterium
Sulfolobus solfataricus;
glucose production from starch saccharification by thermostable
glucoamylase
SO Biotechnol. Lett.; (1990) 12, 6, 431-32
CODEN: BILED3
AU Lama L; Nicolaus B; Trincone A; Morzillo P; De Rosa M; Gambacorta A
AN 1990-10306 BIOTECHDS

L89 ANSWER 7 OF 7 LIFESCI COPYRIGHT 2000 CSA DUPLICATE 3
TI **Trehalose** in archaebacteria.
SO SYST. APPL. MICROBIOL., (1988) vol. 10, no. 3, pp. 215-217.
AU Nicolaus, B.; Gambacorta, A.; Basso, A.L.; Riccio, R.; De Rosa, M.; Grant,,
W.D.
AN 88:92917 LIFESCI

=> d.ab tot

L89 ANSWER 1 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB A transferase is claimed, which acts on a saccharide composed of at least
3 sugar units, where at least 3 glucose residues are linked alpha-1,4 so
as to transfer the alpha-1,4 linkages to alpha-1, alpha-1 linkages. Also
claimed are: (a) a gene coding for the transferase; (b) a process for
producing an oligosaccharide using the transferase; (c) an amylase that
has principal activity of acting on a saccharide composed of 3 sugar
units, where at least 3 sugar units on the reducing end side are glucose
units and the linkage between the first and second glucose units is
alpha-1, alpha-1, while the linkage between the second and the third
glucose units is alpha-1,4, so as to liberate alpha, alpha-
trehalose by hydrolyzing the alpha-1,4 linkage within the
molecular chain of the substrate and that liberates disaccharides and
monosaccharides as the principle final products; (d) a process for
producing the amylase; (e) a gene coding for the amylase; and (e) a
process of producing alpha-alpha-**trehalose** from e.g.
malto-oligosaccharides by using a combination of the transferase and the
amylase. (306pp)

L89 ANSWER 2 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB A new **thermostable enzyme forms** a
non-reducing saccharide with a
trehalose structure when reacted with a reducing partial starch
hydrolyzate with a degree of glucose polymerization of at least 3,
preferably with a **trehalose** end unit. The enzyme is stable up
to 85 deg at pH 7.0 for 60 min, and is from a **Sulfolobus** sp.
The enzyme has a mol.wt. of 69,000-79,000 (SDS-PAGE), a pI of 5.4-6.4, an
optimum temp. of 75 deg (at pH 5.5 for 60 min), an optimum pH of 5.0-5.5
(at 60 deg for 60 min), and pH stability at pH 4.0-9.5 (at 25 deg for 16
hr). The product may be purified further by strongly acidic
cation-exchange chromatography. A food product, cosmetic or
pharmaceutical containing the product is also new. **Trehalose**
(in hydrous or anhydrous crystalline form) may be produced by treating
the product with glucoamylase (EC-3.2.1.3) or alpha-glucosidase
(EC-3.2.1.20). The product may be used as a sweetener, osmoregulator,
excipient, etc., and has higher stability than reducing starch
hydrolyzates. The process may be carried out on an industrial scale at

relatively low cost. (26pp)

L89 ANSWER 3 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB The following are claimed: (1) a thermostable **trehalose**-releasing enzyme (I), which specifically hydrolyzes the linkage between the **trehalose** portion and the remaining glycosyl portion of a non-reducing **saccharide** having a terminal **trehalose** unit and a degree of glucose polymerization of at least 3; (2) production of (I) by culturing an (I)-producing microorganism in a nutrient medium and recovering (I) from the culture; (3) a process for producing **trehalose** by allowing (I) to act on a solution containing a saccharide as above; (4) a **trehalose** prepared by the above process; and (5) a composition containing the **trehalose** of (I), especially a food product, cosmetic or pharmaceutical. Preferably, (I) is derived from *Sulfovobolus acidocaldarius* ATCC 33909, *S. acidocaldarius* ATCC 49426, *Sulfovobolus solfataricus* ATCC 35091 and *S. solfataricus* ATCC 35092. (I) has better thermal stability than similar enzymes derived from *Rhizobium* and sp. *Arthrobacter* sp., and it is stable at temp. levels above 55 deg. (I) has a mol.wt. of 54,000-64,000 (SDS-PAGE), a pI of 5.6-6.6, and an optimum temp. of 75 deg when incubated at pH 6 for 30 min. (36pp)

L89 ANSWER 4 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB A new non-reducing **saccharide**-forming enzyme (I) is prepared by culturing a bacterium of the genera *Rhizobium*, *Arthrobacter*, *Brevibacterium*, *Flavobacterium*, *Micrococcus*, *Curtobacterium*, *Mycobacterium* or *Terrebacter* or their mutants, especially *Rhizobium* sp. M-11 (FERM BP-4130) and *Arthrobacter* sp. Q36 (FERM BP-4316). (I) is capable of catalyzing the formation of trehalose-type sugars with a trehalose structure as an end unit from partial starch hydrolyzates of degree of glucose polymerization at least 3. Glucoamylase (EC-3.2.1.3) and alpha-glucosidase (EC-3.2.1.20) may then be used to convert the product to trehalose. The trehalose-type sugars are useful in food, cosmetics and pharmaceuticals. (I) has mol.wt. 76,000-87,000 (SDS-PAGE), isoelectric point 3.6 +/- 4.6 using an amphotolyte, optimal activity at 35-40 deg and pH 6.4-7.2, thermostability up to 35-40 deg at pH 7.0 for 1 hr; and pH stability of 5.5-11.0 at 25 deg for 16 hr. (I) forms alpha-glucosyl trehalose of formula Gn-T (where G = glucose residue, n = integer and T = alpha,alpha-trehalose). Alpha-glucosyl trehalose and its compositions are also new. (42pp)

L89 ANSWER 5 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB *Sulfovobolus solfataricus* MT-4 (ATCC 49155), an archaebacterium capable of converting starch to glucose and **trehalose**, was grown at 87 deg in a defined culture medium. Amylase activity was isolated from the cytoplasmic fraction of disrupted cells by ammonium sulfate precipitation, acetone precipitation and dialysis. The partially purified enzyme (PPE) was stable after 5 hr at 80 deg, and showed a half-life of 1 hr at 90 deg. Amylolytic activity was detected at pH 3.5-9.0 and 30-100 deg. Optimal activity was shown at 70 deg and pH 5.5. The PPE was inhibited by Cu²⁺ and Zn²⁺, but not by Mg²⁺, dithiothreitol or beta-cyclodextrin. Ca²⁺ was not required for activity. PPE hydrolyzed starch and amylopectin to form glucose, and hydrolyzed linear oligosaccharides (more than 3 sugar units) to form glucose and malto derivatives. Non-reducing alpha,alpha'-trehalose (a potential sweetener, cosmetic and cryoprotectant) was also formed. Further enzyme purification is being investigated in order to determine whether a single enzyme is responsible for both the hydrolysis and **trehalose** production activities. (9. ref)

L89 ANSWER 6 OF 7 BIOTECHDS COPYRIGHT 2000 DERWENT INFORMATION LTD
AB Alginate-immobilized **Sulfolobus** solfataricus strain MT-4 (ATCC 49155) was used for the saccharification of starch to produce glucose. Immobilized cells (2.5 g wet wt.) were added to starch (15 mg) in 9 ml of 10 mM acetate buffer pH 5.5 and incubated at 70 deg. Amylolytic activity of *S. solfataricus* converted starch to glucose and **trehalose** after 1 hr and 3 hr, respectively. The relative molar ratio of glucose and **trehalose** was 2:1. Glucose and **trehalose** represented 44% of the initial amount of starch. As glucose was the first product of starch hydrolysis with whole cells of *S. solfataricus*, the amylolytic activity was determined as a glucoamylase (EC-3.2.1.3). The formation of the non-reducing sugar **trehalose**, and the absence of maltose, maltotriose, etc., in the hydrolysis process suggested that a new type of enzymic activity, or multiple enzyme pathway was present in *S. solfataricus*. (7 ref)

L89 ANSWER 7 OF 7 LIFESCI COPYRIGHT 2000 CSA DUPLICATE 3
AB The non-reducing disaccharide **trehalose** (alpha-D-glucopyranosyl- alpha-D-glucopyranoside) was identified in **Sulfolobus** solfataricus by super(13)C NMR spectroscopy. The screening of a range of other archaeabacteria, using a rapid isolation and purification procedure for **trehalose**, indicated that this disaccharide is present in a number of halophilic archaeabacteria, thermophilic and sulphur-dependent archaeabacteria and methanogenic archaeabacteria.

=> log y

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	34.86	35.01

STN INTERNATIONAL LOGOFF AT 16:50:02 ON 19 OCT 2000